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EXAMINER

JORGENSEN, LELAND R

ART UNIT	PAPER NUMBER
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2675

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/768,829

Applicant(s)

CHU ET AL.

Examiner

Leland R. Jorgensen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1, 2, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang et al., USPN 5,661,476.

Claim 1

Claim 1 describes a reduced set character entry system for an electronic appliance. Wang teaches a reduced set character entry system for an electronic appliance comprising a first set of multiple keys, 102-7 – 102-11. The first set of multiple keys represents a selected subset comprising a single row of characters from a set of QWERTY style keyboard rows, 103a – 103c. Each of the keys is associated with a character of the selected subset such that when any of the first set of multiple keys is actuated the associated character is input to the electronic appliance. Wang, col. 3, lines 21 – 53; and figure 1a.

Wang teaches a second set of keys, at least one of the second set of keys actuated to change the selected row, 102-1 – 102-6. Wang, col. 3, lines 21 – 53; and figure 1a.

Wang teaches an electronic appliance display 101, the display displaying the characters of the selected row 101a. Wang, figure 1b; col. 2, lines 27 – 33.

Claim 2

Claim 2 is dependant on claim 1. Wang teaches that the electronic appliance display additionally displays previously input characters. Wang, col. 3, line 67 – col. 4, line 2.

Claim 6

Claim 6 is dependant on claim 1. Wang teaches one of the second set of keys is actuated to shift the case of the characters associated with the first set of keys. Wang, col. 3, lines 65 – 67.

3. Claims 15 - 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Kaehler, USPN 5,128,672.

Claim 15

Claim 15 is a compact keyboard input device for an electronic appliance. Kaehler teaches a compact keyboard input device comprising a set of character input keys [dynamic key locations 24], with the set less in number than an input character set and displayed in a single row. Each of the keys comprises an electronic character display and corresponding input mechanism. Kaehler, col. 4, lines 4 - 26; col. 4, line 54 – col. 5, line 4.

Each of the displays shows an individual character of the input character set associated with the display. Kaehler, figures 3a – 3l. Actuation of the corresponding input mechanism causing the displayed character to be input to the electronic appliance. Kaehler, col. 4, line 67 – col. 5, line 5.

Kaehler teaches at least one selection key [Flip key 26]. Actuation of the selection key causes each of the displays to display a different individual character of the input character set. Kaehler, col. 6, lines 22 – 25.

Claim 16

Claim 16 is dependant on claim 15. Kaehler adds that the electronic appliance has an output display [test display screen 12 or 40]. The output display displays previously entered characters. Kaehler, col. 4, lines 27 – 38; figures 1 and 2.

Claim 17

Claim 17 is dependant on claim 16. Kaehler shows that the electronic appliance comprises a top surface; a bottom surface; and a plurality of side surfaces connecting the top surface and the bottom surface. Kaehler, figure 1. Kaehler shows the output display 12 disposed on the top surface.

Kaehler teaches that one or more of the character keys and selection keys 18, 20, and 22 are disposed on one or more of the side surfaces. Kaehler, figure 1.

Claim 18

Claim 18 is dependant on claim 15. Kaehler teaches a control key [shift buttons 18] that switches the displayed characters between upper case and lower case characters. Kaehler, col. 7, line 43 – col. 8, line 15; col. 9, line 63 – col. 10, line 22.

Claim 19

Claim 19 is dependant on claim 15. Kaehler teaches that the input character set is alphabetic and numeric. Kaehler, col. 5, lines 18 – 61.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Acevedo, USPN 5,818,361.

Claim 3

Claim 3 is dependant on claim 2 and adds that each of the first set of multiple keys comprises an electronic character display and input mechanism, the electronic character display retaining an image of an associated character of the selected row and the electronic appliance display retaining only the previously input characters.

Wang does not teach that each of the first set of multiple keys comprises an electronic character display and input mechanism.

Acevedo teaches that each of a set of multiple keys comprises an electronic character display and input mechanism, the electronic character display retaining an image of an associated character. Acevedo, col. 3, lines 1 – 4; col. 4, lines 1 – 7; and figure 1.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the display keys of Acevedo with the reduced character entry system of Wang. Acevedo invites such combination by teaching.

In this respect, the display keyboard according to the present invention substantially departs from the conventional concepts and designs of the prior art, and in so doing provides an apparatus primarily developed for the purpose of displaying the alphanumeric character, task, and indicia associated with a key of a keyboard for a plurality of software applications.

Therefore, it can be appreciated that there exists a continuing need for a new and improved display keyboard which can be used for displaying the

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alphanumeric character, task, and indicia associated with a key of a keyboard for a plurality of software applications. In this regard, the present invention substantially fulfills this need.

Acevedo, col. 1, lines 34 – 47. Acevedo adds the following advantages.

Each display key has a liquid crystal display, light emitting diode display, or any future state of the art display invention situated thereon for depicting alphanumeric characters, symbols, special characters, pictures, icons abbreviations, short explanations, and indicia. Such versatility is especially beneficial in games wherein pictures of fire buttons, ray guns, laser guns, cannons, throttles, steering wheel-like controls, pedals, and brakes may be depicted to represent a function of the present game. The display keys are also capable of depicting a foreign alphabet such as Greek, Russian, Arabic, Chinese, and Japanese along with any accompanying symbols such as tildes. The display keys are adapted to change color to further differentiate between alphanumeric characters (i.e., numbers and letters) and keys that have functions that differ such as in the application of games. The color of all the display keys may also be selected as a matter of personal preference. Alternatively, each display key may comprise of a light emitting diode display. Such display keys are easily removed and replaced if required. As an option, each of the display keys may be equipped with a light to allow the utilization thereof in the absence of ambient light.

Acevedo, col.4, lines 3 – 24.

6. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Abraham, USPN 5,841,374.

Claim 4

Claim 4 is dependant on claim 1 and adds that the electronic appliance comprises a top surface; a bottom surface; a plurality of side surfaces connecting the top surface and the bottom surface; the electronic appliance display disposed on the top surface; the first set of at least ten keys disposed on the top surface, and the second set of keys disposed on one or more of the side surfaces.

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Although Wang does not specifically teach a top surface, bottom surface, a plurality of side surfaces connecting the top surface and the bottom surfaces, with the electronic appliance display disposed on the top surface, such is inherent to the appliance taught by Wang. Wang, however, does not teach the first set of at least ten keys disposed on the top surface, and the second set of keys disposed on one or more of the side surfaces.

Abraham teaches a top surface (see figure 1), a bottom surface (see figure 2); a plurality of side surfaces connecting the top surface and the bottom surface (edge 22); with the electronic appliance display disposed on the top surface (see figures 1 and 2). Abraham also teaches a first set of at least ten keys disposed on the top surface [keys 16 or 21], and a second set of keys disposed on one or more of the side surfaces [thumb keys 20]. Abraham, col. 3, lines 3 – 22; col. 6, lines 16 – 19; and figures 14 and 15.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the top and side keys of Abraham with the reduced character entry system of Wang. Abraham invite such combination, teaching,

Therefore, there is a need for a smaller microcomputer that can be easily carried in one's pocket and which allows for rapid data entry with both hands in a manner similar to that used with a standard key pad. There is a further need to reduce the size of a keyboard by limiting the number of keys to less than twenty while retaining the same characters and functions as that of the standard 104 computer keyboard without the use of mapping or modifiers.

Abraham, col. 1, lines 40 – 47. Abraham teaches about its key arrangement, “Yet another object of the invention is to provide an improved keyboard, the keys thereof being more ergonomic, by utilizing the thumbs to operate some keys located along the edges of the keyboard.” Abraham, col. 2, lines 28 – 31.

Claim 5

Abraham teaches a top surface (see figure 1), a bottom surface (see figure 2); a plurality of side surfaces connecting the top surface and the bottom surface (edge 22); with the electronic appliance display disposed on the top surface (see figures 1 and 2). Abraham also teaches one or more of the first and second set of keys are disposed on one or more of the side surfaces [thumb keys 20]. Abraham, col. 3, lines 3 – 22; col. 6, lines 16 – 19; and figures 14 and 15.

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Moon, USPN 5,812,117.

Claim 7

Claim 7 is dependant on claim 1 and adds that the second set of keys comprises two keys, a first of the two keys actuated to change the currently selected row to a row above the currently selected row and a second of the two keys actuated to change the currently selected row to a row below the currently selected row.

Although the up-down left-right keys shown in figures 1a – 1c of Wang strongly suggest such ability, Wang does not specifically teach such keys.

Moon teaches two such keys B2. Moon, col. 3, lines 24 – 49; and figure 2B.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the scroll keys of Moon with the reduced character entry system of Wang to allow quicker and more efficient entry of keyed data. Moon invites such combination. After noting problems with prior art, Moon teaches,

However, there are problems in adopting the soft keyboard having the above keyboard arrangement for a portable personal terminal having a small

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display device. That is, since the keyboard arrangement of a PC is best-suitable for two-handed input, difficulties arise when inputting information using only one pen, which is presumably performed with one hand. Also, since the arrangement of the conventional soft keyboard coincides with that of the ordinary PC keyboard consisting of a plurality of keyboard rows, the area occupied by the keyboard is great, which is not ideal for the display in a computer having a small display screen. To overcome this problem, the soft keyboard may be shifted on the screen; however, this causes a great deal of inconvenience when inputting large amounts of data.

Moon, col. 1, lines 45 – 58. Moon adds as an object of its invention “to provide a portable information terminal adopting a soft keyboard whose screen-occupying area is reduced, to minimize data input inconveniences caused by a large screen-occupying area.” Moon, col. 1, lines 61 – 64. Moon concludes,

As described above, the portable information terminal according to the present invention receives information by contacting the position of a corresponding soft keyboard with a pen when part of the keys are displayed on the screen of the LCD or the corresponding information keys are displayed on the screen using a horizontal or vertical scroll key, if necessary. Therefore, the area of screen occupied by the soft keyboard is minimized so that the inconvenience generated during inputting of data is reduced.

Moon, col. 4, lines 25 – 33.

8. Claims 8 – 13, 30, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaehler.

Claim 8

Claim 8 is an electronic appliance. Kaehler teaches an electronic appliance having a housing having top and bottom surfaces and a plurality of side surfaces connecting the top and bottom surfaces. Kaehler, figure 1.

Kaehler teaches that the electronic appliance comprises a first set of input keys located on the top surface. The set comprises a single row of characters. Kaehler, col. 4, lines 4 - 26; and figure 1. Each of the input keys is associated with an individual character of a first subset of a set of input characters. The subset comprises a row of characters from a set of keyboard rows. Actuation of any of the input keys causing the character associated with the actuated input key to be input to the electronic appliance. Kaehler, col. 4, line 54 – col. 5, line 5.

Kaehler teaches at least one selection key [Flip key 26]. Actuation of the selection key changes the first subset to a second subset so that each of the input keys is associated with an individual character of the second subset and the display is changed to display the second subset. Kaehler, col. 6, lines 22 – 25.

Kaehler teaches a display [display screen 14] located on the top surface. The display shows the first subset of input characters. Kaehler, figures 3a – 3l.

Kaehler does not teach that at least one selection key located on one of the side surfaces.

Kaehler teaches that a shift button 18, a control button 20, and options button 22 are located on one of the side surfaces. Kaehler, col. 4, lines 13 – 15; and figure 1.

It would have been obvious to one of ordinary skill in the art at the time of the invention to place at least one selection key on one of the side surfaces of Kaehler. Kaehler invites such combination.

An object of the present invention is to reduce the number of keys required on a keyboard, thereby reducing its size, without significantly increasing the number of keystrokes (typed keys) required to type all of the characters of the QWERTY keyboard. The present invention meets this objective by providing a keyboard having a minimal number of keys while providing all of the characters of a QWERTY keyboard and minimizing the number of keystrokes to type the characters of the QWERTY keyboard. In the present invention, unlike a standard fixed keyboard, some if not all of the keys are dynamic, in that they have the

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ability to display different characters while the keyboard is in use. Hence, each key may represent several letters, digits, or symbols. Although different arrangement are quite possible, each key typically only represents a single character at a time and each character is typically only displayed at one key location. In addition, the user has the ability to manually cause the set of characters being displayed to change, such as by selecting either the Shift, Flip or Delete characters, which are fixed characters further described below, or to predictively change the character set layout by simply selecting a character to be typed.

Kaehler, col. 5, lines 38 – 61. Kaehler invites one to consider different arrangements to met this object.

Although the present invention has been described with reference to FIGS. 1-6 and with emphasis on a particular embodiment, it should be understood that the figures are for illustration only and should not be taken as limitations upon the invention. It is contemplated that many changes and modifications may be made by person of ordinary skill in the art to the elements, process and arrangement of elements or steps of the invention without departing from the spirit and scope of the invention as disclosed above.

Kaehler, col. 12, lines 24 – 33.

Claim 9

Claim 9 is dependant on claim 8. Kaehler adds that the electronic appliance has an output display [test display screen 12 or 40]. The output display displays previously entered characters. Kaehler, col. 4, lines 27 – 38; and figures 1 and 2.

Claim 10

Claim 10 is dependant on claim 9. Kaehler teaches that the display comprises a first display showing the previously input characters [text display 12] and a second segmented display comprising each of the first set of input keys [character set display screen 14]. Kaehler, col. 4, lines 4 – 26; and figure 1.

Claim 11

Claim 11 is dependant on claim 8 and adds that one or more of the first set of input keys is disposed on one or more of the side surfaces. As noted in the discussion on claim 8 above, Kaehler teaches input keys on the side surfaces.

Kaehler, however, does not specifically state that one or more of the first set of input keys are on a side surface.

For the reasons stated in the discussion in claim 8 above, it would have been obvious to one of ordinary skill in the art at the time of the invention to place one or more of the first set of input keys on one of the side surfaces of Kaehler.

Claim 12

Claim 12 is dependant on claim 8. Kaehler teaches that the input character set is alphabetic and numeric. Kaehler, col. 5, lines 18 – 61.

Claim 13

Claim 13 is dependant on claim 8. Kaehler teaches a control key located on one of the side surfaces [shift buttons 18] that switches the displayed characters between upper case and lower case characters. Kaehler, col. 7, line 43 – col. 8, line 15; col. 9, line 63 – col. 10, line 22.

Claim 30

Claim 30 is an electronic appliance. Kaehler teaches an electronic appliance having a housing having top and bottom surfaces and a plurality of side surfaces connecting the top and bottom surfaces and a reduced set character entry system. Kaehler, figure 1.

Kaehler teaches that the electronic appliance comprises a first set of input keys located on the top surface. Kaehler, col. 4, lines 4 - 26; and figure 1. The set of input characters are

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arranged in a single row. Each of the input keys is associated with an individual character of a first subset of a set of input characters. The set of input characters comprises a row from a set of keyboard rows. Actuation of any of the input keys causing the character associated with the actuated input key to be input to the electronic appliance. Kaehler, col. 4, line 54 – col. 5, line 5.

Kaehler teaches at least one selection key [Flip key 26]. Actuation of the selection key changes the first subset to a second subset so that each of the input keys is associated with an individual character of the second subset. Kaehler, col. 6, lines 22 – 25.

Kaehler does not teach that at least one selection key located on one of the side surfaces.

Kaehler teaches that a shift button 18, a control button 20, and options button 22 are located on one of the side surfaces. Kaehler, col. 4, lines 13 – 15; and figure 1.

For the reasons stated in the discussion about claim 8 above, it would have been obvious to one of ordinary skill in the art at the time of the invention to place at least one selection key on one of the side surfaces of Kaehler.

Claim 32

Claim 32 is dependant on claim 30 and adds that the input keys and the selection key are located on different ones of the side surfaces.

Kaehler does not teach that the input keys and the selection key are located on different ones of the side surfaces.

Kaehler teaches that a shift button 18, a control button 20, and options button 22 are located on one of the side surfaces with a second shift button 18 located on the opposite side from the first shift button, control button, and options button. Kaehler, col. 4, lines 13 – 15; and figure 1.

For the reasons stated in the discussion about claims 8 and 30, it would have been obvious to one of ordinary skill in the art at the time of the invention to locate the input keys and the selection key on different ones of the side surfaces of Kaehler.

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaehler in view of Wang.

Claim 14

Claim 14 is dependant on claim 8 and adds that the subsets are rows of a QWERTY style keyboard layout.

Although Kaehler teaches that the subsets are taken from a QWERTY style keyboard layout, Kaehler does not specifically teach that the subsets are rows of a QWERTY style keyboard layout. Kaehler, col. 5, lines 23 – 47.

Wang teaches subsets that are rows of a QWERTY style keyboard layout 103a – 103c. Wang, col. 3, lines 21 – 53; and figure 1a.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the rows of a QWERTY style keyboard layout as taught by Wang with the reduced keyboard of Kaehler. Wang invites such combination, teaching,

Integrated circuits have enabled the proliferation of handheld miniature computers with powerful storage, processing, and communication capabilities. These computers include what are known as "personal digital assistants", which are used for such applications as information organization, "personal communicators", or other information access applications. Collectively, such devices are popularly known as personal information devices (PIDs). As PIDs continue to be miniaturized for portability reasons, equipping these PIDs with "QWERTY" style keyboards as primary input devices has become impractical. Any attempt to implement a full keyboard on a PID inevitably results in a design with either keys that are arranged too close for comfortable and accurate

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operation, or a PID housing which is significant larger than desired, or both. For example, many electronic organizers with a full computer keyboard are simply too big to be carried like a pager (e.g. clipped to a belt, or comfortably placed in a shirt pocket.

Wang, col. 1, lines 9 – 26. Wang adds,

In addition, it is desired to minimize both power consumption and the physical size of the PID. Power consumption is minimized if the character input operation does not depend on a computationally intensive mechanism, like the voice or handwriting recognition techniques discussed above. By avoiding computationally intensive operations, a longer battery life between charging results.

Wang, col. 1, lines 57 – 63. Wang concludes,

The present invention is especially applicable to two-way wireless portable electronic messaging devices, such as two-way pagers, palmtop computers and other small portable electronic devices, to which miniaturization is important. Because only a small number of keys are needed to enable selection of a large number of selections, a high percentage of the total surface area of the device's housing can be allocated to provide a relatively large display.

Wang, col. 2, lines 44 – 51.

10. Claims 20 – 29, 31, and 33 - 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Macor, USPN 5,841,849, in view of Kaehler.

Claim 20

Claim 20 is an electronic appliance having an input/output device. Macor teaches an electronic appliance having an input/output device comprising a display [functional display 130], a wrist band [appendages 100 and 102] connected to the display for securing the display to the wrist of a user, and a flexible assembly [door 108 and formatted information display 126] operatively connected to the display. Macor, col. 3, lines 32 – 60; and figures 2, 3, 5, 7, 9, and 11. Macor teaches “Regarding the sizes of the elements of the wearable device 103, function

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display 130 and formulated information display 126 have the smallest size that allows the user to discern the symbols, virtual keys and buttons appearing at both displays.” Macor, col. 3, lines 56 – 60.

Macor does not teach that the display shows a selected set of input characters and that the flexible assembly having a set of character keys located thereon.

Kaehler teaches a display with each of the character keys associated with an individual character of the selected set of input characters and at least one control key, and wherein actuation of any of the characters keys causes the character associated with the actuated key to be input into the device and actuation of the control key causes the currently selected set of input characters to be changed to a different set of input characters. See discussion of claim 15 above.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the reduced character entry system of Kaehler with the wrist mounted input/output device of Macor. Kaehler invites such combination by teaching,

As microprocessor based devices have been reduced in physical size, a great demand has arisen for keyboards and/or touchpads ("keyboards") which can be readily used with such devices, especially for the purpose of standard English text entry. Several schemes exist for encoding various alphabets on small keyboards for use with such devices, but these keyboards have not completely satisfied this demand. For example, a number of handheld electronic planner/calendar products, produced by various Japanese manufactures, utilize different types of alphabetized keyboards for entering text. Although some of these keyboards follow the English character set layout popularized by QWERTY style keyboards ("QWERTY" stands for the organization of six letters on the second row of the keyboard), the size of the keys and the spacing between keys have been reduced to the point that the keyboards can no longer be used for rapid text entry. Users of such products are forced to use one or two fingers at a time to type text, which is typically referred to as the "hunt and pack" method of typing. The QWERTY layout has been used on most typewriters and computer keyboards and has become the generally accepted standard for touch typists. Small QWERTY layout keyboards are unacceptable because they force the use of the "hunt and peck" method of typing, which is inefficient and uncomfortable to

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touch typists. Attempts to modify the QWERTY layout have also met with little success, either because of the reduced key spacing or size, the bizarre arrangement of the characters in the layout, or the keystroke methodology employed.

Kaehler, col. 1, lines 14 – 45. Kaehler adds,

An object of the present invention is to reduce the number of keys required on a keyboard, thereby reducing its size, without significantly increasing the number of keystrokes (typed keys) required to type all of the characters of the QWERTY keyboard. The present invention meets this objective by providing a keyboard having a minimal number of keys while providing all of the characters of a QWERTY keyboard and minimizing the number of keystrokes to type the characters of the QWERTY keyboard. In the present invention, unlike a standard fixed keyboard, some if not all of the keys are dynamic, in that they have the ability to display different characters while the keyboard is in use. Hence, each key may represent several letters, digits, or symbols. Although different arrangement are quite possible, each key typically only represents a single character at a time and each character is typically only displayed at one key location. In addition, the user has the ability to manually cause the set of characters being displayed to change, such as by selecting either the Shift, Flip or Delete characters, which are fixed characters further described below, or to predictively change the character set layout by simply selecting a character to be typed.

Kaehler, col. 5, lines 38 – 61

Claim 21

Claim 21 is dependant on claim 20. Macor teaches that the flexible assembly is pivotal from a position where the assembly extends substantially along and underneath the wristband to a position substantially perpendicular to the wristband. Macor, col. 3, lines 47 – 50; figures 2 and 3.

Claim 22

Claim 22 is dependant on claim 20. Macor teaches that the electronic appliance is a wristwatch. Macor, col. 3, lines 41 – 42; and figure 2.

Claim 23

Claim 23 is a portable phone. Macor teaches a portable phone including a housing having top and bottom surfaces and a plurality of side surfaces connecting the top and bottom surfaces, the portable phone comprising a display [function display 8] located on the top surface [inner surface 10]; and an input assembly [second base member 4 and formulated display 16] operatively connected to the portable phone. Macor, col. 2, line 45 – col. 3, line 30; and figures 1, 4, 6, 8, and 10.

Macor does not teach that the display shows a selected set of input characters and that the flexible assembly having a set of character keys located thereon.

Kaehler teaches a display with each of the character keys associated with an individual character of the selected set of input characters and at least one control key, and wherein actuation of any of the characters keys causes the character associated with the actuated key to be input into the device and actuation of the control key causes the currently selected set of input characters to be changed to a different set of input characters. See discussion of claim 15 above.

For the reasons stated in the discussion of claim 20 above, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the reduced character entry system of Kaehler with the portable phone of Macor.

Claim 24

Claim 24 is dependant on claim 23. Macor teaches that the input assembly is integrated with the portable phone. The input assembly is rotatable from a closed position where the input assembly is substantially enclosed within the housing to a position where the character keys and the control key are exposed for actuation. Macor, col. 1, lines 48 – 65; col. 2, lines 45 - 53.

Claim 25

Claim 25 is dependant on claim 24. Macor teaches that the input assembly's axis of rotation is perpendicular to a plane containing the side surfaces. Macor, figures 1, 4, 6, 8, and 10.

Claim 26

Claim 26 is dependant on claim 23. Macor shows that the input assembly is externally attachable to the portable phone. Macor, col. 2, line 45 – col. 3, line 30; and figures 1, 4, 6, 8, and 10.

Claim 27

Claim 27 describes an electronic appliance. Macor teaches an electronic appliance including a housing having top and bottom surfaces and a plurality of side surfaces connecting the top and bottom surfaces. An input assembly [second base member 4 and formulated display 16] is operatively connected to the portable phone. Macor, col. 2, line 45 – col. 3, line 30; and figures 1, 4, 6, 8, and 10. Macor teaches that the input assembly is integrated with the portable phone. The input assembly is rotatable from a closed position where the input assembly is substantially enclosed within the housing to a position where the character keys and the control key are exposed for actuation. Macor, col. 1, lines 48 – 65; col. 2, lines 45 - 53.

Macor does not teach that the display shows a selected set of input characters and that the flexible assembly having a set of character keys located thereon.

Kaehler teaches a display with each of the character keys associated with an individual character of the selected set of input characters and at least one control key, and wherein actuation of any of the characters keys causes the character associated with the actuated key to be

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input into the device and actuation of the control key causes the currently selected set of input characters to be changed to a different set of input characters. See discussion of claim 15 above.

For the reasons stated in the discussion of claim 20 above, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the reduced character entry system of Kaehler with the portable phone of Macor.

Claim 28

Claim 28 is dependant on claim 27. Macor teaches that the input assembly's axis of rotation is perpendicular to a plane containing the side surfaces. Macor, figures 1, 4, 6, 8, and 10.

Claim 29

Claim 29 is dependant on claim 27. The electronic appliance has a display [function display 8] located on the top surface [inner surface 10]. Macor, col. 2, line 45 – col. 3, line 30; and figures 1, 4, 6, 8, and 10.

Claim 31

Claim 31 is dependant on claim 30. Macor teaches that the electronic appliance is a portable phone. Macor, col. 2, line 45 – col. 3, line 30; and figures 1, 4, 6, 8, and 10.

Claim 33

Claim 33 is dependant on claim 31 and adds that the input keys and the selection key are located on different ones of the side surfaces.

Neither Macor nor Kaehler does not teach that the input keys and the selection key are located on different ones of the side surfaces.

Kaehler teaches that a shift button 18, a control button 20, and options button 22 are located on one of the side surfaces with a second shift button 18 located on the opposite side from the first shift button, control button, and options button. Kaehler, col. 4, lines 13 – 15; and figure 1.

For the reasons stated in the discussion about claims 8 and 30, it would have been obvious to one of ordinary skill in the art at the time of the invention to locate the input keys and the selection key on different ones of the side surfaces of Kaehler and Macor.

Claim 34

Claim 34 is dependant on claim 33, and adds that the input keys located thereon is opposite to the side surface having the selection key located thereon.

Neither Macor nor Kaehler does not teach that the input keys located thereon is opposite to the side surface having the selection key located thereon.

Kaehler teaches that a shift button 18, a control button 20, and options button 22 are located on one of the side surfaces with a second shift button 18 located on the opposite side from the first shift button, control button, and options button. Kaehler, col. 4, lines 13 – 15; and figure 1.

For the reasons stated in the discussion about claims 8 and 30, it would have been obvious to one of ordinary skill in the art at the time of the invention to locate the input keys opposite to the side surface having the selection key located thereon.

Claim 35

Claim 35 is dependant on claim 30. Both Kaehler and Macor show a display located on the top surface. Kaehler, figures 3a – 3l. Macor, col. 2, line 45 – col. 3, line 30; and figures 1,

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4, 6, 8, and 10. Macor teaches that the information displayed on the display is rotated to be in an orientation appropriate for viewing by a user utilizing the input keys. Macor, col. 1, lines 48 – 65; col. 2, lines 45 – 53; and figures 1, 4, 6, 8, and 10.

11. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaehler in view of Lo, USPN 6,072,471.

Claim 36

Claim 36 is dependant on claim 30 and adds that an equal number of input keys and selection keys are located upon the first one and second one of the side surfaces, with at least one key of the set of input keys acting as a selection key and at least one selection key acting as an input key as a result of switching between dominate hand modes.

Kaehler does not teach that an equal number of input keys and selection keys are located upon the first one and second one of the side surfaces. Kaehler also does not teach at least one key of the set of input keys acting as a selection key and at least one selection key acting as an input key as a result of switching between dominate hand modes.

Kaehler teaches that a shift button 18, a control button 20, and options button 22 are located on one of the side surfaces with a second shift button 18 located on the opposite side from the first shift button, control button, and options button. Kaehler, col. 4, lines 13 – 15; and figure 1.

For the reasons stated in the discussion about claims 8 and 30, it would have been obvious to one of ordinary skill in the art at the time of the invention to locate the input keys and the selection key upon the first one and second one of the side surfaces of Kaehler.

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Lo teaches keys that can be selectively activated and disabled so that the keys may be operated by the dominate hand. Lo, col. 4, lines 1 – 13; and figure 14.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the light-right switching mechanism of Lo with the electronic appliance of Kaehler to produce an electronic appliance having input keys and selection keys that may be operated by the dominate hand. Lo invites such combination by teaching,

The ergonomic mouse is adapted for a particular hand, i.e., either the right or left hand. Also shown is an ambidextrous version with a pair of upright, finger engaging sides mirrored about a vertical longitudinal plane. Although about 90% of mouse users are right-handed and only about 10% are left-handed, an ambidextrous version is important because most mice are sold bundled with computer systems, and a bundled mouse must suit all users.

Lo, col. 1, lines 30 – 37. Lo adds the following objects of its ambidextrous electronic device.

Support a hand in a relatively upright position, so as to avoid causing twisting and other deviations of the hand and arm.

Accommodate both right-handed and left-handed users.

Provide ambidexterity without compromising comfort.

Provide exactly the same feel and comfort for both hands.

Enable fine and precise maneuvering by flexing fingers and thumb, without requiring movement of the whole arm.

Provide right-handed and left-handed sets of buttons which can be alternately disabled.

Lo, col. 1, lines 43 – 53. Lo concludes,

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Accordingly, an ambidextrous upright computer mouse is provided for being grasped by a relatively upright hand, so as to avoid causing twisting and other deviations of the hand and arm. It can be used by both right-handed and left-handed users. It provides right-handed and left-handed sets of buttons which can be alternately disabled. It provides exactly the same feel and comfort for both hands. It provides ambidexterity without compromising feel and comfort.

Lo, col. 4, lines 37 – 44.

Response to Arguments

12. Applicant's arguments filed 24 January 2002 have been fully considered but they are not persuasive.

Applicant argues that all the prior art cites shows a complete keyboard rather than a only a subset of the keyboard. For example, Wang et al. shows a keyboard having a top row 103a, a middle row 103b, and a bottom row 103c. Wang, figure 1a. Applicant argues that the claims describe a reduced keyboard which shows only one row at a time, either top row 103a, middle row 103b, and bottom row 103c, with the user scrolling through the rows as needed. See e.g. specification, figure 2a and 2b. Unfortunately, the claims cannot be interpreted so narrowly.

During examination, the claims must be interpreted as broadly as their terms reasonably allow. This means that the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. The words in a claim are generally not limited in their meaning by what is shown or disclosed in the specification. It is only when the specification provides definitions for terms appearing in the claims that the specification can be used in interpreting claim language. MPEP 2111.01.

Although the claims describe displaying a single row, with the single row being a subset of the keyboard, the claims contain no language limiting the display to only a single row. In fact,

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the claim uses the transitional phrase “comprising.” The transitional term “comprising”, which is synonymous with “including,” “containing,” or “characterized by,” is inclusive or open-ended and does not exclude additional, unrecited elements or method steps. See, e.g., *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997) (“Comprising” is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim.); *Moleculon Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 229 USPQ 805 (Fed. Cir. 1986); *In re Baxter*, 656 F.2d 679, 686, 210 USPQ 795, 803 (CCPA 1981); *Ex parte Davis*, 80 USPQ 448, 450 (Bd. App. 1948) (“comprising” leaves “the claim open for the inclusion of unspecified ingredients even in major amounts”). MPEP 2111.03. Thus, although the claims describe a subset including a single row of the keyboard, without additional language limiting the display to showing only the subset, the possibility exists that the claim may include the display shown by Wang, figure 1a.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mathias, USPN 6,386,773 B1, teaches an ergonomic keyboard.

Miller, Jr. et al., USPN 6,370,018 B1, teaches a portable keyboard.

King et al., USPN 5,953,541, teaches a reduced keyboard.

Keinonen et al., US Pub. No. 2001/0006587 A1, teaches a keyboard arrangement.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leland Jorgensen whose telephone number is 703-305-2650. The examiner can normally be reached on Monday through Friday, 7:00 a.m. through 3:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven J. Saras can be reached on 703-305-9720.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:


(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington, VA, Sixth Floor (Receptionist).

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, telephone number (703) 306-0377.

lrj



STEVEN SARAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600